

What is claimed is:

1. An interactive television system for providing content, the content including identifiers, said system comprising:
 - a set-top box including a content identifier detector;
 - at least one database comprising a mapping of content identifiers to interactive data; and
 - a channel to access interactive content via the interactive data.
2. A system according to claim 1, wherein a digital watermark comprises the content identifier.
3. A system according to claim 2, wherein the digital watermark comprises a payload including the content identifier.
4. A system according to claim 2, wherein the content comprises context information.
5. A system according to claim 4, wherein the context information comprises key words.
6. A system according to claim 5, wherein the key words are used to identify interactive data.
7. An interactive television system for providing content, the content including identifiers, said system comprising:
 - a content receiver including a content identifier detector, the detector comprising a digital watermark decoder;
 - a central database including a set of content identifiers and corresponding interactive data; and

a distributed router in communication with a database, said database maintaining a subset of the content identifiers and corresponding interactive data.

8. An interactive television system for providing content, the content including identifiers, said system comprising:

a content broadcast source;

a content receiver;

at least one router in communication with a database, the database including a mapping of content identifier to interactive data, wherein the interactive data is pushed to said content receiver.

9. The system according to claim 8, wherein a digital watermark comprises at least one of the content identifiers.

10. The system according to claim 9, wherein the interactive data is pushed from the router to the content receiver.

11. The system according to claim 9, wherein the interactive data is pushed from the broadcast source to the receiver.

12. A method of supplying interactive data comprising the steps of:

indexing interactive data according to a corresponding content identifier;

storing subsets of the interactive data in distributed routers; and

accessing a subset of interactive data from a lowest cost router.

13. The method according to claim 12, wherein the lowest cost router is a router having the shortest access time.

14. The method according to claim 13, wherein a digital watermark component comprises the content identifier.

15. A method of operating an interactive television system comprising the steps of:

associated interactive data with content identifiers; and
providing the interactive data to a content receiver in advance of corresponding content.

16. The method of claim 15, wherein at least one of the content identifiers is embedded in the corresponding content via a digital watermark.

17. A method according to claim 16, wherein the content receiver comprises a set-top box.

18. A method according to claim 16, wherein the content receiver comprises a distributed router.

19. A method according to claim 16, further comprising the step of providing interactive content to the content receiver in advance of the corresponding content.

20. An interactive television system for distributing content including an identifier, said system comprising:

a cable head end to receive the content, the content including an embedded digital watermark comprising an identifier, said cable head end comprising:

a digital watermark detector to extract the identifier from the received content;

a bridge to communicate the extracted identifier to a database, the database including a trigger indexed according to the identifier, said bridge to receive a corresponding trigger identified in the database as corresponding to the identifier; and

an inserter communicating with said bridge to insert the trigger into the received content.

21. The interactive television system according to claim 20, wherein said inserter communicates with at least a set-top box.

22. The interactive television system according to claim 20, wherein said cable head end communicates the trigger to a network and receives from the network related content.

23. The interactive television system according to claim 22, wherein the related content comprises interactive content.

24. The interactive television system according to claim 22, wherein the related content comprises one of a web page, HTML code, Java applet, audio, visual, graphic, and text.

25. The interactive television system according to claim 22, wherein said inserter inserts the related content into the received content.

26. An interactive television system for distributing content embedded with unique identifiers, said system comprising:

a cable head end to receive content steganographically embedded with a unique identifier, said cable head end comprising an aggregator in communication with at least one set-top box and with a database, said aggregator communicating the unique identifier once extracted from the content from the set-top box to the database, and communicating related interactive data from the database to the set-top box.

27. The system according to claim 26, wherein said aggregator communicates with a plurality of set-top boxes, and wherein said aggregator multicasts the related interactive data to the set-top boxes.

28. The system according to claim 26, wherein the embedding comprises a digital watermark.

29. A method of operating an interactive television system comprising the steps of:

registering content to obtain at least one unique identifier for the content, and upon registration, storing the unique identifier in a database and associating interactive data with the unique identifier;

digitally watermarking the unique identifier in the content;

distributing the content to at least one set-top box;

in the set-top box, decoding the digital watermark to extract the unique identifier;

communicating the unique identifier to the database to retrieve the associated interactive data; and

in the set-top box, communicating with a network to retrieve interactive content associated with received interactive data.

30. In an interactive television system, a method of indexing a database comprising the steps of:

decoding a digital watermark to extract an identifier; and

communicating the identifier to a database including interactive data indexed according to identifiers.

31. The method according to claim 30, wherein said identifier comprises a unique content identifier.

32. The method according to claim 30, wherein said identifier comprises a time identifier.

33. The method according to claim 32, wherein said time identifier comprises an indication of the relevant time segment for a content item.

34. The method according to claim 30, wherein said identifier further comprises a time identifier.

35. The method according to claim 30, further comprising the step of communicating a detector identifier with the identifier.

36. The method according to claim 35, wherein the detector identifier comprises a distributor identifier and a manufacture identifier.

37. In an interactive television system, a method comprising:
providing an electronic program guide (EPG);
populating the EPG with sets of content identifiers, wherein each set corresponds to a predetermined program.

38. The method of claim 37, wherein a digital watermark includes a content identifier, and the content identifier triggers a response of pushing a set of content identifiers to a set-top box.

39. The method of claim 37, wherein the system comprises a set-top box including memory and a digital watermark decoder, wherein the EPG resides in the set-top box memory, and wherein the decoder decodes a digital watermark embedded in content, the digital watermark including a content identifier, the content identifier being compared with the EPG to verify the EPG.

40. A detecting device for interactive television comprising:
a detector for extracting a content identifier from a VBI of a video signal received via a forward channel, where the content identifier is a binary code used to index related information; and

a communication device for sending the content identifier to a secondary location where the related information is stored via a return channel.

41. The device of claim 40 wherein the detecting device includes a cache for storing related information.

42. The device of claim 41 wherein the cache is operable to receive the related information via the forward channel through which the video signal is received.

43. The device of claim 41 wherein the detector is operable to check the cache for related information before passing the content identifier to the secondary location.

44. The device of claim 41 wherein the cache is operable to store a portion of related information associated with most recently received video signal data in the detecting device.

45. The device of claim 41 wherein the cache is operable to store most recently requested information from the secondary location.

46. The device of claim 40 wherein the content identifier is sent along with context information to the secondary location to index the related information.

47. The device of claim 46 wherein the context information includes information provided by a user.

48. The device of claim 47 wherein the context information includes user preferences provided by the user.

49. The device of claim 46 wherein the context information includes data identifying a distributor, such that related information returned to the is dependent on the distributor.

50. The device of claim 40 including a transmitter for sending the related information to a display device for display to a viewer of the video signal.

51. The device of claim 50 wherein the transmitter is a wireless transmitter for sending the related information to a personal display device.

52. The device of claim 50 wherein the transmitter sends the related information for rendering on a display device where the video signal is being displayed.

53. The device of claim 40 wherein the related information is returned from the secondary location to the device via the return channel.

54. The device of claim 40 wherein the related information is returned from the secondary location to the device via the forward channel.

55. The device of claim 40 including a watermark detector for detecting a digital watermark in the video signal, wherein the digital watermark includes information used to index the related information.

56. The device of claim 50 including a digital watermark detector for detecting a digital watermark in an audio track of the video signal, wherein the digital watermark includes information used to index the related information.